REMARKS

Claims 1-49 are pending in this application. By this Amendment, applicants have canceled claims 5, 6, 12, 13, 19, 20, 26, 27, 41 and 44 without prejudice, amended claims 1, 7, 11, 15, 21, 25, 30, 40, 42, 43 and 45, and added new claims 50 and 51. Accordingly, claims 1-4, 7-11, 14-18, 21-25, 28-40, 42-43 and 45-51 are currently under examination in the subject application.

Rejection under 35 U.S.C. § 112, second paragraph

On page 2 of the January 16, 2003 Office Action, the Examiner rejected claims 7, 21 and 25 under 35 U.S.C. 112, second paragraph, as allegedly indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The Examiner alleged that claims 7 and 21 are indefinite in their recitation of "such as" as it is unclear whether the subsequently recited claim elements are merely exemplary or are required claim elements; and that claim 25 is indefinite in its recitation of "the tissue-specific promoter" which lacks antecedent basis in claim 15 from which it depends.

In response, applicants have amended claims 7, 21 and 25 to more clearly define their invention. Accordingly, applicants respectfully request that the Examiner reconsider and withdraw the rejection of claim 7, 21 and 25 under 35 U.S.C. 112, second paragraph.

Rejection under 35 U.S.C. § 112, first paragraph

On page 3 of the January 16, 2003 Office Action, the Examiner rejected claims 13, 20 and 27 under 35 U.S.C. § 112, first paragraph, as allegedly containing subject matter which was not described in the specification in such a way as to reasonably

convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

In response, applicants have canceled claims 13, 20 and 27 without prejudice. Accordingly, the rejection of claims 13, 20 and 27 under 35 U.S.C. § 112, first paragraph, is moot.

Rejection under 35 U.S.C. § 112, first paragraph

On pages 4-6 of the January 16, 2003 Office Action, the Examiner rejected claims 1-5, 7-10, 12-24, 26-32, 34 and 36-49 under 35 U.S.C. 112, first paragraph, alleging that the specification, while being enabling for claims limited to a pair of plants each containing at least one gene encoding a subunit of a ribonuclease wherein at least one of the genes comprises a tapetum-specific promoter operably linked to the subunit-encoding sequence, does not reasonably provide enablement for claims broadly drawn to the use of any type of promoter including constitutive promoters for both subunit-encoding constructs.

In response, to advance prosecution of the subject application without conceding the correctness of the Examiners' rejection, applicants have amended the claims of the subject application such that all of the pending claims now recite at least one of the specific promoters recited in any of claims 11 and 25, which are not included in this enablement rejection. Applicants understand that by not including claims 11 and 25 in this enablement rejection, the Examiner has acknowledged that the promoters recited in these two claims are enabled. Accordingly, all of applicants' claims as amended are free of this rejection under 35 U.S.C. 112, first paragraph.

Rejection under 35 U.S.C. § 102

On page 7 of the January 16, 2003 Office Action, the Examiner rejected claims 1-5, 7-8, 10-11, 14-19, 21-22, 24-25, 28-32, 34, 36-40, 43 and 46-49 under 35 U.S.C. 102(e) as allegedly anticipated by Gutterson et al.(U.S. 6,392,119 effectively filed 24 January 1997) for reasons as stated in the last Office Action.

In response, to advance prosecution of the subject application without conceding the correctness of the Examiners' rejection, applicants have amended the claims of the subject application such that all of the pending claims now recite that one or both of the polypeptides A or B (A* or B*) is fused to a carrier protein or a protein targeting signal, as recited in any of claims 12, 26, 41, and 44, which the Examiner has acknowledged are free of prior art on page 9 of the January 16, 2003 Office Action. Accordingly, all of applicants' claims as amended are free of prior art and free of this rejection under 35 U.S.C. § 102.

Rejection under 35 U.S.C. § 103

On page 8 of the January 16, 2003 Office Action, the Examiner rejected claims 9 and 23 under 35 U.S.C. 103(a) as allegedly unpatentable over Gutterson et al (U.S. 6,392,119 effectively filed January 1997).

In response, as noted above, because claims 9 and 23 now incorporate the limitations of 12 and 26, respectively, claims 9 and 23 are also free of prior art and free of this rejection under 35 U.S.C. § 103.

No fee, other than the enclosed $110.00 fee for a one-month extension of time, is deemed necessary in connection with the

filing of this Amendment. However, if any additional fee is required, authorization is hereby given to charge the amount of any such fee to Deposit Account No. 03-3125.

Respectfully submitted,

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5/16/03
Date

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Attachment A

(Marked-up Claims to show amendments)

1. (3X Amended) A pair of parent plants for producing seeds comprising:

(i) a first parent plant containing one or more gene sequences encoding a polypeptide A, and

(ii) a second parent plant containing one or more gene sequences encoding a polypeptide B;

wherein each of A and B, when expressed in a plant that expresses only one of A or B, is not an active enzyme, is not a regulatory protein and is not a protein which affects the functionality and/or viability and/or the structural integrity of a cell, but when expressed in a plant that expresses both A and B, A and B form an active enzyme, or a regulatory protein, or a protein which affects the structural integrity of a plant cell,

wherein the one or more gene sequences encoding polypeptide A or B comprises a tapetum-specific promoter, an embryo-specific promoter, or a seed specific promoter; and

wherein one or both of the polypeptides A or B is fused to a carrier protein or a protein targeting signal.

2. A pair of plants as claimed in claim 1, wherein the one or more gene sequences from at least one of the plants is a transgene.

3. The pair of plants as claimed in claim 1, wherein the polypeptides A and B, when expressed in the same plant, cause

cell ablation.

4. The pair of parent plants as claimed in claim 1, wherein one of the parent plants is male-sterile.

~~5. The pair of plants as claimed in claim 2, wherein the one or more gene sequences encoding polypeptides A or B, is operatively linked to a tissue specific promoter.~~

~~6. The pair of plants as claimed in claim 1, wherein the regulatory protein is a transcription factor.~~

7. (Twice Amended) The pair of plants as claimed in claim 1 wherein the polypeptides A and B are two polypeptide subunits of an enzyme having RNase activity ~~such as the enzyme Barnase or RNase A~~.

8. The pair of plants as claimed in claim 1, wherein the polypeptides A and B are artificially split polypeptides of an active enzyme, regulatory protein or protein which affects the structural integrity of a cell.

9. The pair of plants as claimed in claim 1, wherein each parent plant is homozygous with respect to the one or more gene sequences encoding polypeptide A or B respectively.

10. The pair of plants as claimed in claim 3, wherein the cause of male-sterility is direct or indirect.

11. (Amended) The pair of plants as claimed in claim ~~5~~ 1, wherein the ~~tissue-specific promoter is~~ one or more gene sequences encoding polypeptide A or B comprises a tapetum-specific promoter~~, an embryo-specific promoter or a seed specific~~

~~promoter~~.

~~12. The pair of plants as claimed in claim 1, wherein one or both of the polypeptides is fused to a carrier protein or a protein targeting signal.~~

~~13. The pair of plants as claimed in claim 1, wherein each polypeptide A and B is linked to a protein dimerization domain of a dimeric or multimeric protein that promotes association between A and B.~~

14. The pair of plants as claimed in claim 1, wherein the one or more gene sequences from at least one of the parent plants is a heterologous gene sequence.

15. (3X Amended) A method for producing a plant having a desired phenotype by virtue of an active enzyme, a regulatory protein or a protein which affects the structural integrity of a cell, the method comprising crossing a first plant with a second plant wherein the first plant contains one or more gene sequences encoding a polypeptide A but which plant does not have the desired phenotype and wherein the second plant contains one or more gene sequences encoding a polypeptide B but which plant does not have the desired phenotype, wherein each of A and B, when expressed in a plant that expresses only one of A or B, is not an active enzyme, is not a regulatory protein and is not a protein which affects the functionality and/or viability and/or the structural integrity of a cell, but when expressed in a plant that expresses both A and B, A and B form an active enzyme, a regulatory protein, or a protein which affects the structural integrity of a plant cell,

wherein the one or more gene sequences encoding polypeptide A or B comprises a tapetum-specific promoter, an embryo-specific

promoter, or a seed specific promoter; and

wherein one or both of the polypeptides A and B is fused to a carrier protein or protein targeting signal.

16. The method of claim 15, wherein the one or more gene sequences from at least one of the first and the second plant is a transgene.

17. The method as claimed in claim 15, wherein the desired phenotype is cell ablation.

18. The method as claimed in claim 15, wherein one of the first plant or the second plant is male-sterile.

~~19. The method as claimed in claim 15, wherein the one or more gene sequences encoding A or B is operatively linked to a tissue-specific promoter.~~

~~20. The method as claimed in claim 15, wherein the polypeptides A and B are naturally occurring subunits of an active enzyme, regulatory protein or protein which affects the structural integrity of a cell.~~

21. (Twice Amended) The method as claimed in claim 15 wherein the polypeptides A and B are two polypeptide subunits of an enzyme having RNase activity ~~such as the enzyme Barnase, or RNase A~~.

22. The method as claimed in claim 15, wherein the polypeptides A and B are artificially split polypeptides of an active enzyme, regulatory protein or protein which affects the structural integrity of a cell.

23. The method as claimed in claim 15, wherein each of the first and second plants is homozygous with respect to the gene sequence encoding polypeptide A or B, respectively.

24. The method as claimed in claim 15, wherein the desired phenotypic trait is direct or indirect male-sterility.

25. (Amended) The method as claimed in claim 15, wherein the ~~tissue-specific promoter is~~ one or more gene sequences encoding polypeptide A or B comprises a tapetum-specific promoter~~, an embryo-specific promoter or a seed specific promoter~~.

~~26. The method as claimed in claim 15, wherein one or both of the polypeptides A and B is fused to a carrier protein or protein targeting signal.~~

~~27. The method as claimed in claim 15, wherein each polypeptide A and B is linked to a different protein dimerisation domain of a dimeric or multimeric protein.~~

28. The method as claimed in claim 15, wherein at least one of the first or second plants contains, as the one or more gene sequences, heterologous gene sequences.

29. A seed obtained by crossing the pair of plants of claim 1, or a plant obtained from the seed, wherein the seed comprises the one or more gene sequences encoding polypeptide A and the one or more gene sequences encoding polypeptide B.

30. (3X Amended) A seed or plant, having a phenotype by virtue of an active enzyme, a regulatory protein or a protein which affects the structural integrity of a cell, which is caused by the combined action of two or more transgenes, comprising a first

transgene encoding a polypeptide A and a second transgene encoding a polypeptide B wherein each of A and B, when expressed in a plant that expresses only one of A or B, is not an active enzyme, is not a regulatory protein and is not a protein which affects the functionality and/or viability and/or the structural integrity of a cell, but when expressed in a plant that expresses both A and B, A and B form an active enzyme, a regulatory protein, or a protein which affects the structural integrity of a plant cell,

wherein the transgene encoding polypeptide A or B comprises a tapetum-specific promoter, an embryo-specific promoter, or a seed specific promoter; and

wherein one or both of the polypeptides A and B is fused to a carrier protein or protein targeting signal.

31. A seed or progeny plant obtained from the plant of claim 29, wherein the seed or progeny plant comprises at least one of the one or more gene sequences encoding polypeptides A or B.

32. The pair of plants as claimed in claim 3, wherein the cell ablation causes male-sterility.

33. The pair of plants as claimed in claim 3, wherein the cell ablation causes embryoless seeds.

34. The method as claimed in claim 17, wherein the cell ablation causes male sterility.

35. The method as claimed in claim 17, wherein the cell ablation causes embryoless seeds.

36. The plant as claimed in claim 29 which is male sterile.

37. A seed or progeny plant obtained from the male sterile plant of claim 36, wherein the seed or progeny plant comprises at least one of the one or more gene sequences encoding polypeptides A or B.

38. The seed or plant as claimed in claim 30, wherein the phenotype of the plant is male sterility.

39. A seed or progeny plant obtained from the male sterile plant of claim 38, wherein the seed or progeny plant comprises at least one of the one or more gene sequences encoding polypeptides A or B.

40. (Amended) A pair of parent plants for producing seeds comprising:

(i) a first parent plant containing a gene sequence encoding a polypeptide A* comprising a methionine codon followed by amino acids 1 to 35 or 1 to 36 of mature Barnase; and

(ii) a second parent plant containing a gene sequence encoding a polypeptide B* comprising a methionine codon followed by amino acids 37 to 110 of mature Barnase,

wherein each of A* and B*, when expressed in a plant that expresses only one of A* or B*, is not an active RNase enzyme, but when expressed in a plant that expresses both A* and B*, A* and B* form an active RNase enzyme,

<u>wherein the one or both gene sequences encoding polypeptide A* or B* comprises a tapetum-specific promoter, an embryo-specific promoter, or a seed specific promoter; and</u>

wherein one or both of the polypeptides A* or B* is fused to a carrier protein or a protein targeting signal.

~~41. The pair of parent plants of claim 40 wherein one or both of the polypeptides A* or B* is fused to a carrier protein or a protein targeting signal.~~

42. (Amended) The pair of parent plants of claim ~~41~~ 40, wherein said carrier protein or protein targeting signal is GUS.

43. (Amended) A method of producing a male sterile plant by virtue of an active RNase enzyme the method comprising crossing;

(i) a first parent plant containing a gene sequence encoding a polypeptide A* comprising a methionine codon followed by amino acids 1 to 35 or 1 to 36 of mature Barnase with

(ii) a second parent plant containing a gene sequence encoding a polypeptide B* comprising a methionine codon followed by amino acids 37 to 110 of mature Barnase,

wherein each of A* and B*, when expressed in a plant that expresses only one of A* or B*, is not an active RNase enzyme, but when expressed in a plant that expresses both A* and B*, A* and B* form an active RNase enzyme,

wherein the one or both gene sequences encoding polypeptide A* or B* comprises a tapetum-specific promoter, an embryo-specific promoter, or a seed specific promoter; and

wherein one or both of the polypeptides A* or B* is fused to a carrier protein or a protein targeting signal.

~~44. The method of claim 43 wherein one or both of the polypeptides A* or B* is fused to a carrier protein or a protein targeting signal.~~

45. (Amended) The method according to claim ~~44~~ 43, wherein said carrier protein or protein targeting signal is GUS.

46. A seed or plant obtained by a process comprising crossing the pair of parent plants as claimed in claim 40 wherein said seed or plant contains at least one of said one or more gene sequence encoding polypeptides A* or B*.

47. The seed or plant of claim 46, said seed or plant having a phenotype by virtue of an active enzyme, a regulatory protein or a protein which affects the structural integrity of a cell, which phenotype is caused by the combined action of two or more transgenes that are not present on the same copy of a chromosome.

48. The seed or plant obtained from the progeny plant produced by the method as claimed in claim 43 wherein said seed or plant contains at least one of said one or more gene sequence encoding polypeptides A* or B*.

49. The seed obtained from the plant of claim 46 or 48.

50. (New) The pair of plants of claim 7, wherein the enzyme having RNase activity is Barnase or RNase A.

51. (New) The method of claim 21, wherein the enzyme having RNase activity is Barnase or RNase A.